

# Predictors for Acute and Chronic Pain in Patients with Severe Haemophilia in the PROBE Cohort

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**Table 1: Logit Models examining effects of predictors on reporting of Acute and Chronic Pain**

	Acute Pain			Chronic Pain		
	Odds Ratio [Std. Err]	Odds Ratio [Std. Err]	Odds Ratio [Std. Err]	Odds Ratio [Std. Err]	Odds Ratio [Std. Err]	Odds Ratio [Std. Err]
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Bleeds (Base Case 0-1 Bleed)</b>						
2-3 Bleeds	2.93 ** [0.84]	2.92** [0.85]	3.00** [0.89]	1.97* [0.55]	1.97* [0.56]	2.22* [0.76]
4-7 Bleeds	4.83 ** [1.46]	4.85** [1.51]	3.88** [1.25]	3.02** [0.89]	2.91** [0.88]	1.68 [0.58]
8-15 Bleeds	8.63 ** [2.67]	8.71** [2.79]	6.80** [2.24]	4.94** [1.47]	4.82** [1.49]	3.45** [1.25]
>15 Bleeds	10.78** [3.06]	11.14** [3.53]	9.16** [3.09]	5.17** [1.38]	4.76** [1.40]	2.32* [0.79]
<b>Current Treatment (Base Case On-Demand)</b>						
Intermittent, "periodic" prophylaxis		1.01 [0.34]	0.95 [0.33]		1.11 [0.38]	1.15 [0.41]
Regular prophylaxis		0.90 [0.24]	0.93 [0.26]		0.81 [0.21]	1.12 [0.32]
Immune tolerance induction (ITI)		3.86 [4.56]	4.12 [4.95]		1.02 [0.95]	2.12 [2.34]
Reports a Target Joint			1.98** [0.49]			1.41 [0.38]
Doesn't Know if they have a Target Joint			1.06 [0.37]			2.29 [0.93]
Has a Joint with Reduced Range of Motion			1.18 [0.32]			11.02** [3.15]
Constant	0.53** [0.11]	0.55** [0.18]	0.34 [0.14]	0.84 [0.17]	0.99 [0.31]	0.12** [0.05]
n	676	650	625	676	651	625
Pseudo R2	0.12	0.12	0.14	0.06	0.07	0.20

\* p < 0.05, \*\*p < 0.01

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## BACKGROUND

For people with severe haemophilia, acute and chronic pain is often part of their daily reality. We looked at the extent to which this pain was influenced by annual bleed rate, presence of target joints or joints with reduced range of motion.

## METHODS

A binary regression analysis was performed to measure the association of acute and chronic pain with selected predictors from the PROBE Phase 2 data. The dependent variable (outcome) was the likelihood of reporting chronic and acute pain (with positive OR indicating increased likelihood in those with the predictor compared to those without). The 5 predictor variables included in the model were: age, reported annual bleeding rate (ABR), current treatment, presence of a "target joint" and range of motion (ROM) in a joint.

## RESULTS

There were 1287 respondents from 21 countries in total, 658 of whom had severe haemophilia and information for the predictor variables. For acute pain, the univariate logistic regression analysis showed a significant association for ABR (all bleeds) with patients reporting 2-3 bleeds/year being 2.9 times more likely to report acute pain compared to those with 0-1 bleeds/year, and those reporting more than 15 bleeds/year being 10.3 times more likely. Those reporting the presence of a target joint were 2.0 times more likely to report acute pain than those without a target joint. In the full model (all 5 predictors) the impact of ABR is reduced but remains significant. Overall, the full model only predicts 13% of the variation in those who report acute pain.

For chronic pain models, the univariate model predicts that those with 2-3 bleeds/year and >15 bleeds/year are 2.2 and 5.5 times more likely to report chronic pain compared to those with 0-1 bleeds/year, explaining 14% of the variance in chronic pain. In the full model however, the most responsible predictor was the presence of a joint with reduced ROM, with those reporting a limitation being 5 times more likely to report chronic pain than those with full range of motion, which explains 23% of the variance.

## CONCLUSION

Our predictors were found to correlate with acute and chronic pain. While acute pain is primarily driven by the frequency of bleeding and the presence of a target joint, chronic pain is primarily driven by the presence of a joint with reduced range of motion. Therefore, it would be worth exploring whether treatment regimens targeted to reduce annual bleeding rates or those aimed at improving the range of motion would be more effective in reducing chronic pain.

**Table 2: Correlation Matrix of variables used logit models**

	Acute Pain	Chronic Pain	No. Of Bleeds /Year	Current Treatment	Reported Target Joints	Reported Reduced Range of Motion
<b>Acute Pain</b>	1					
<b>Chronic Pain</b>	0.1881	1				
<b>No. Of Bleeds/Year</b>	0.3647	0.2674	1			
<b>Current Treatment</b>	-0.1404	-0.1193	-0.4051	1		
<b>Reported Target Joints</b>	0.1634	0.2522	0.3157	-0.1848	1	
<b>Reported Reduced Range of Motion</b>	0.1988	0.4872	0.3477	-0.1971	0.3348	1

